

1 1. A method of block diagram modeling in a data processing system, comprising:  
 2 in a first block, receiving a first value indicative of an index into a lookup table;  
 3 in the first block, generating information indicative of the location of the first value  
 4 relative to a predefined domain of possible indexed values that define regions;  
 5 in a second block, receiving the information generated by the first block; and  
 6 using the information received in the second block to determine an output value of a  
 7 first lookup table.

1 2. The method of claim 1, wherein the generated information comprises information  
 2 identifying a region of the predefined domain within which the first value falls.

1 3. The method of claim 2, wherein the generated information further comprises  
 2 information identifying a position of the first value within the identified segment.

1 4. The method of claim 1, further comprising:  
 2 in a third block different from the second block, receiving the information generated  
 3 by the first block; and  
 4 using the information received in the third block to determine an output value of a  
 5 second lookup table different from the first lookup table.

1 5. The method of claim 1, further comprising:  
 2 in a fourth block, receiving a second value indicative of an index into a lookup table;  
 3 in the fourth block, generating information indicative of the location of the second  
 4 value relative to a predefined domain of possible index values;  
 5 in the second block, receiving the information generated by the fourth block; and  
 6 using the information received in the second block from the first block and the fourth  
 7 block to determine an output value of the first lookup table.

1 6. The method of claim 1, wherein the first and fourth blocks are two of N index search  
2 blocks used to perform an N-dimensional interpolation, further comprising:  
3 in each of the N index search blocks, receiving a value indicative of an index into the  
4 lookup table and corresponding to a different one of N dimensions;  
5 in each of the N index search blocks, generating information indicative of the location  
6 of such value relative to the predefined domain of possible index values; and  
7 in the second block, receiving the information generated by each of the N index  
8 search blocks; and  
9 using the information received in the second block to determine an output value of the  
10 first lookup table.

1 7. The method of claim 1, wherein determining an output value of the first lookup table  
2 comprises using the information received in the second block to interpolate values in a  
3 lookup table.

1 8. The method of claim 1, further comprising:  
2 maintaining in a block library a pre-lookup index search block and an interpolation  
3 block that uses output of the pre-lookup index search block for interpolated table lookup; and  
4 instantiating the index search block to create the first block and instantiating the  
5 interpolation block to create the second block.

1 9. The method of claim 8, further comprising:  
2 receiving parameters from a user to instantiate the pre-lookup index search block and  
3 the interpolation block.

1 10. The method of claim 9, wherein receiving comprises providing the user with a dialog  
2 box having fields for specifying values of the parameters for the pre-lookup index search  
3 block.

1 11. The method of claim 9, wherein receiving comprises providing the user with a textual  
2 API for programmatically specifying values of the parameters.

3 12. The method of claim 10, wherein the parameters for the pre-lookup index search  
4 block comprise breakpoint data.

1 13. The method of claim 9, wherein receiving comprises providing the user with a dialog  
2 box having fields for specifying values of the parameters for the interpolation block.

1 14. The method of claim 13, wherein the parameters for the interpolation block comprise  
2 table data.

1 15. The method of claim 6, wherein the generated information comprises a breakpoint  
2 data set index value and a distance fraction value for each dimension and corresponding input  
3 value chosen by the user.

1 16. The method of claim 1, comprising:  
2 using the graphical block diagram of the graphical block diagram model as a  
3 specification for interpretation by automatic code generation software that generates code to  
4 perform computations equivalent to computations performed by the graphical block diagram  
5 model.

1 17. A method of graphical block diagram processing, comprising;  
2 receiving as an input a block diagram model that includes interpolation lookup blocks  
3 which each perform index search operations and interpolated table lookup;  
4 detecting if the interpolation lookup blocks have shared input values and breakpoint  
5 data sets; and  
6 interpreting the block diagram model as if the block diagram model included separate  
7 index search blocks and interpolated lookup blocks.

1 18. The method of claim 17, further comprising using the interpreted graphical block  
2 diagram by automatic code generation software that generates code to perform computations  
3 equivalent to computations performed by the graphical block diagram model.

1 19. A method of graphical block diagram processing, comprising:  
2 maintaining in a block library an index search block and an interpolation block that  
3 uses output of one or more pre-lookup index search blocks; and  
4 enabling a user to use the pre-lookup index search and interpolation blocks to build a  
5 graphical block diagram model.

1 20. A computer program product residing on a computer-readable medium for block  
2 diagram modeling, the computer program product comprising instructions causing a  
3 computer to:  
4 in a first block, receive a first value indicative of an index into a lookup table;  
5 in the first block, generate information indicative of the location of the first value  
6 relative to a predefined domain of possible indexed values;  
7 in a second block, receive the information generated by the first block; and  
8 use the information received in the second block to determine an output value of a  
9 first lookup table.

1 21. A computer system comprising:  
2 in a first block, means for receiving a first value indicative of an index into a lookup  
3 table;  
4 in the first block, means for generating information indicative of the location of the  
5 first value relative to a predefined domain of possible indexed values;  
6 in a second block, means for receiving the information generated by the first block;  
7 and  
8 means for using the information received in the second block to determine an output  
9 value of a first lookup table.